

2015 SALOON STOCK CAR ZETEC ENGINE SPECIFICATIONS

The overriding principle of these regulations is that unless it is stated that you can do it, you must work on the principle that you CANNOT. The whole emphasis of these rules is that this is an engine which MUST remain in its standard form.

Those that choose to use this engine must be aware that it will come in for stringent checks on a regular basis, for example camshaft profiles and spring tension will be checked.

The performance of the engine will be closely monitored in relation to existing engines within Saloon Stock Car racing. THIS WILL BE AN ONGOING EVALUATION BY ALL PARTIES – PROMOTERS/DRIVERS/SCRUTINEERS ETC. Should the need arise the SSCA reserve the right to restrict the engine described in these rules. This would most likely be done by the use of exhaust and/or carburettor restrictor.

Permission for any proposed change currently not permitted by the SSCA must be applied for in writing to the Saloon Stock Car Association or by email to info@SaloonStockCars.com. Where upon the Technical Committee will consider the request and duly respond within 28 days. Notification of any decision made will be in the first instance through publication on the official website www.SaloonStockCars.com

If parts are suspected of being illegal you must leave them with the promotion if you do not agree. If you refuse it will automatically make the parts illegal. **It is the responsibility of the driver to prove to the SSCA that the part is legal by the way of written proof of where the part originated. This must be done within seven days, otherwise the part(s) in question will be deemed to be illegal and will result in immediate suspension from racing and referral for disciplinary action.**

1. PERMITTED ENGINE

- The only engine permitted for use is
 - UK/European specification Ford Zetec 1988cc 16v petrol (commonly known as a “black top” due to black plastic cam cover)
 - often referred to as the phase/series 3 engine.
 - in its 136PS form with nominal bore 84.80mm and stroke 88.00mm
 - or a new standard uncoded Ford replacement complete engine as per above.
 - THE ENGINE MUST IN BOTH CASES REMAIN IN ITS STANDARD FORM.
- The engine block must have one of the following codes stamped on it (engine code is located on the exhaust side of the block i.e. right hand side when viewed from the front):
 - **NGB, NGC, NGD (from Ford Mondeo Mk2 16v 1996-2000)**
 - **EDDB, EDDC, EDDD, EDDF (from Ford Focus Mk1 16v 1998-2004)**
 - **EBBC, EBBD, EDDB, EDBB (from Ford Cougar 1998-2001)**
- Production tolerances are permitted providing the total swept volume does not exceed 1989cc.
- All codes or ID numbers must be visible and untouched.

2. ENGINE - GENERAL

- The engine must be mounted in exactly the same position as noted in current technical specifications for the 2-litre pinto engine.
- The stated oil catch tank ruling in the current technical specifications also applies.
- The addition of any material such as (but not exclusively), metal, plastic, or composite, by any means such as (but not exclusively) welding, bonding, encapsulation or encasement to any component is prohibited.
- However, specific repair of the mounting points of the cylinder block to the transmission or chassis is allowed, whilst other casting repairs may be allowed with prior written approval of the SSCA. The use of non-standard replacement fasteners, nuts, bolts, screws, studs and washers which are not connected with, or which do not support, any moving parts of the engine or its compulsorily retained accessories is permitted. Freedom granted to any fastener does not allow for freedom to move items relative to each other.
- The use of thread locking compounds is permitted.
- Gaskets are free except for; cylinder head gasket - please refer to *Rule 6 Cylinder Head* for precise details; inlet manifold gasket – please refer to *Rule 17 Inlet Manifold* for precise details.

- Any process of cleaning may be used on any component providing the surface finish, which must remain standard, is not affected. The expression 'Standard', 'Standard production', or similar expression is deemed to imply that the part has been manufactured by Ford, or a Ford Motor Company Ltd authorised sub-contractor, for specific use on a specific model of the engine.
- Only machining and component preparation carried out by Ford Motor Company Ltd, or by a Ford Motor Company Ltd authorised sub-contractor is allowed unless otherwise specified.
- Any production deburring or imperfection removal during initial manufacture may not be modified or extended. The SSCA's decision will be final if a dispute arises regarding the amount of tool, or other marks that are evident in any particular component.
- The exterior surfaces only (of the complete engine assembly) of ferrous parts may be protected by paint or similar means. No internal component or surface may be coated by any protective finish. No aluminium components may be protected. This paragraph confirms previous and future statements that no rework may be carried out on any component unless specifically authorised by the SSCA. The engine and associated parts must remain exactly as produced by the Ford Motor Company unless expressly detailed in these regulations. However any statement defining minimum weight or dimensions does not grant permission for rework to obtain these minimum values, unless carried out in accordance with these regulations. Only Ford standard parts (Parts manufactured by Ford or a Ford Motor Company authorised sub contractor) specifically for the engine noted in *Rule 1 Permitted Engines* can be used.
- No treatment that alters in any way the surface finish, hardness, or other property of the original production component is allowed. The only exception to this is any deposit derived from the lubrication and combustion processes naturally occurring during the running of the engine.
- The SSCA reserve the right to prohibit the use of specific components introduced as production changes, if in their opinion, they are deemed to have a performance advantage.
- It is not permitted to interchange parts from engines NOT noted in Rule 1 Permitted Engines.
- The SSCA reserve the right to buy any Zetec engine from a driver (for the purposes of this paragraph the term "the engine" relates to the complete cylinder head/engine block from a driver - this does not include, inlet manifold, flywheel, sump, carburetor, clutch, starter motor, exhaust manifold, ECU, wiring loom, HT leads, fan, additional brackets for water pump, water pipe and additional pulleys).
- This must be bought on the day that the engine was used at an official SSCA race meeting, and within 30 minutes of the completion of the race meeting. The amount payable will be fixed at £950 (including VAT). Furthermore, a fully registered driver may purchase an engine for this amount from another driver, as long as they were BOTH using a Zetec engine, racing at the same meeting together and adopting the above procedure. This must be done through the staging promotion ONLY, completing an engine purchase form, paying the purchase price noted above, and a £150 protest fee, before the other party is approached. The SSCA reserves the right to reject a drivers request to purchase, if that request is deemed to not have sound foundation.
- With the exception of Championship post-race scrutineering, the SSCA reserve the right to strip and inspect ANY Zetec engine they see fit. For 2015 a fee of £150 will be payable to the driver who has their engine stripped and it is found to comply fully with the current technical specifications.

3. CYLINDER BLOCK

- Damaged cylinder bores are not permitted to be repaired with cylinder liners.
- No machining of the cylinder block is permitted, this includes no decking etc. However honing/glaze busting of the cylinder bores is permitted.
- The standard crankcase breather tank may be modified, including removal, as long as no air and/or oil escape from this area other than through pipework to a catch tank.
- Pistons must not protrude above the block at top dead centre.
- The standard oil dipstick tube and dipstick must be fitted; **however they maybe modified to fit depending on sump used.**
- It is not permitted to remove or modify the four standard oil spray jets.
- **The standard oil filter maybe replaced.**
- **The standard oil filter maybe replaced with a shorter filter. However this must fit and be located identically to the standard filter and be a commonly available non-competition item.**
- **The flywheel sensor and associated housing must remain completely unmodified.**
- **It is permitted to reduce the depth of the longer bolt fixing points on the exhaust manifold side of the engine, to allow one continuous plate/engine mount to be attached.**

4. SUMP

- The use of a 1.8 litre Ford Sierra CVH sump is permitted. Whilst this may be modified to fit, the

overall size/shape of the sump must not be altered in anyway.

- The only other steel sump permitted is a steel sump, made available through the SSCA and stamped accordingly.
- The use of the standard two piece Ford sump as fitted as standard to the engine noted in *Rule 1 Permitted Engines* is permitted for use, along with the one piece sump fitted as standard to the earlier "Silver Top" Zetec Engines. The original cast aluminum section may be modified and have webs removed to allow for starter motor fitment only, the pressed tin lower component may be replaced with a fabricated part or modified to increase oil capacity up to a maximum of 5 litres.
- The only aluminium sump permitted is that noted above.
- A single bearing cap bolt may be replaced or modified to allow support and relocation for an oil pick up pipe.
- Alternatively a stud can be welded to a main bearing cap bolt to support the oil pick up pipe.

5. OIL PUMP

- It is not permitted to modify the standard Ford oil pump and/or front cover in any way, to include but not exclusively, plunger, pressure valve, spring.

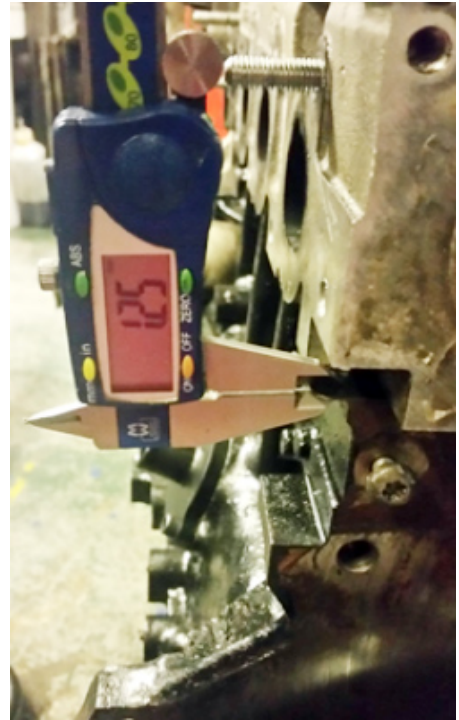
6. CYLINDER HEAD (INCLUDING VALVES AND VALVE GEAR)

- It is not permitted to replace valve guides and valve seat inserts.
- No work that removes, adds, replaces, or transfers material is allowed on the cylinder head with the following exceptions:
 - (a) Simple cleaning which does not alter in any way the shape of the component.
 - (b) Minimal material removal from the head face to correct combustion chamber volume and/or reclaim head flatness. The cylinder head must achieve a minimum thickness of **132.6mm**. To be measured with a 125.00mm – 150.00mm micrometre or digital Vernier calliper. This measurement must be achieved at any point on the cylinder head. The measurement is to be taken from the extreme top and bottom face of the cylinder head, as shown in the photo and excludes gasket).



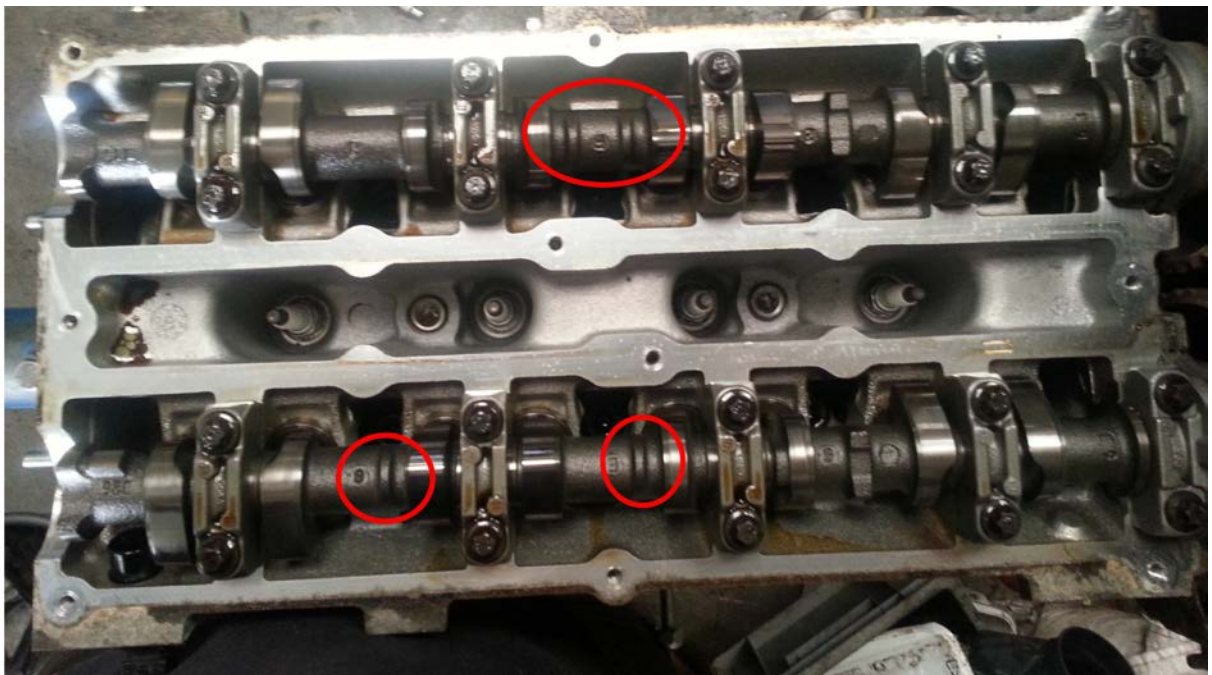
- No internal rework of any combustion chamber is permitted.
- The cam cover assembly cannot be modified or replaced, with the exception of blanking off the original cam cover breather outlet and moving it to any point on the opposite side.
- The oil filler cap must be retained by spring/lock wire or similar. The oil filler cap maybe blanked off.

- All valve train components must not be modified or replaced with non-standard parts. The only permitted modification is to alter the thickness of the tappet shim/follower on top of the cam bucket to achieve the correct valve clearance. Valve springs are not permitted to be shimmed or packed.
- Valves must remain standard Ford supplied items, no re-profiling or polishing is permitted. The original 45 degree seat angle (with 90 degree included) must be maintained.
- Standard valve stem seals must be retained.
- **Head gaskets are free except for the following. They must achieve a minimum compressed thickness of 1mm, and 1.25mm uncompressed, as shown in the diagram on the right. For the avoidance of doubt genuine Ford head gaskets as specifically fitted to the engine noted in Rule 1 Permitted Engines with the following Ford Part numbers, 1071744 or 1105772 are recommended and are the only genuine Ford head gaskets permitted.**



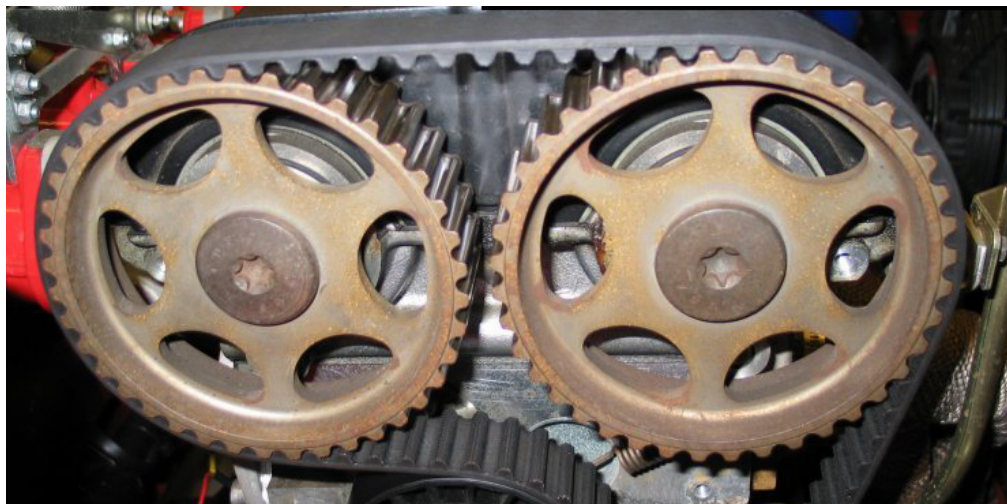
7. CAMSHAFTS AND PULLEYS

- The only camshafts permitted are those fitted as standard production to a Ford Zetec 1988cc "black top" as per picture on following page. Ford 1.8 litre "black top" camshafts are not permitted.
- Each cam is identified with two small casting rings as shown with the red circles.

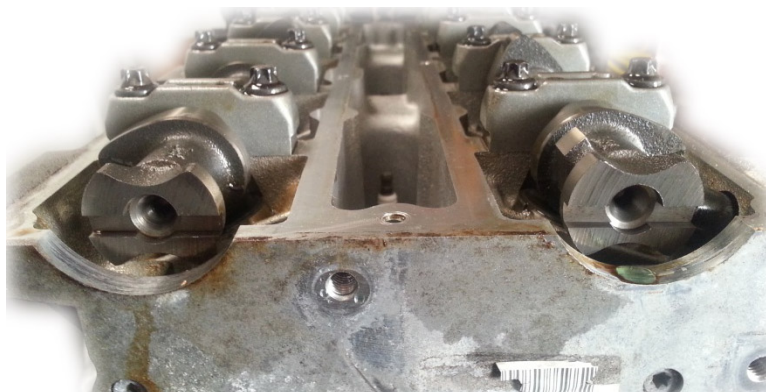


- The exhaust cam (top of picture) and inlet cam (bottom of picture) have the rings in different places. The exhaust ID ring is located centrally in the cam between cylinders two and three, with two rings right next to each other. **The inlet cam has the rings situated apart from each other – one at the end of inlet valve four and the other at inlet valve six.**
- The camshafts must remain entirely unmodified. They must be fully manufactured and ground by the Ford Motor Company. It is prohibited to grind from blanks, regrind or re-profile. Only the production surface finish is permitted. Shot peening, shot blasting, surface treatments and/or polishing are prohibited. Exhaust and inlet camshafts must not be interchanged.
- Cams with damaged timing faces are not allowed.
- The SSCA will be using a profile checker to ensure cams are standard.

- The only permitted camshaft drive pulleys are the standard Ford items as pictured below.



- The spring loaded cam belt tensioner may be locked or replaced with a fixed item.
- The timing of the cams must remain in the standard Ford position with a tolerance of 10 thou (0.254mm) advance or retard measured on the pistons position from top dead center (TDC).
- The timing of the two cams must not be altered independently of each other. A standard Ford locking bar or flat steel bar **MUST** pass between the slots in the back of the cams when in TDC position. Failure to comply with this will result in immediate disciplinary action. An engine at TDC is shown below.



8. CONNECTING RODS

- Connecting rods must be standard.
- They must not be altered in anyway, for example (but not exclusively), machining, grinding or polishing
- It is not permitted to remove metal from the connecting rod or cap.
- Connecting rod bolts must remain standard Ford production items. No aftermarket bolts permitted.
- The con rod must not be modified to fit bolts.

9. PISTONS

- Pistons must be unmodified standard production pistons.
- All three piston rings must be fitted as intended; piston rings must be standard production items or replacement items to Ford Motor Co. dimensions.
- Aftermarket steel piston ring sets are strictly prohibited.

10. CRANKSHAFT

- A standard crankshaft must be used.
- No balancing is permitted.
- Polishing other than the nine bearing surfaces is prohibited.
- Crankshaft journals must remain within Ford positional tolerances if a repair re-grind is carried out.
- Crankshaft pulley and damper must be retained and unmodified.

- Additional drive to the water pump may use this pulley, or an extra pulley mounted in front of the crankshaft damper.
- It is not permitted to alter the number of bearings or fit bearings of less than standard production width.
- The crank journals may be re-ground for reclaim.
- Standard oversize and undersize bearings are permitted.

11. ENGINE COVERS

- ***The cam belt covers maybe modified and/or removed, however it is recommended that some form of cover over the cam belt is retained.***
- ***It is permitted to modify the aluminium cambelt cover and adjoining aluminium plate on the block (as shown highlighted in the photo with a black circle) for the purposes of using wire rope to strap the engine in only.***



12. FLYWHEEL & CLUTCH

- The only permitted flywheel is that provided by the SSCA for this engine with a registered serial number.
- The flywheel, ring gear and mounting bolts must weigh a combined minimum of 6.2kg (this does not include clutch and clutch fixing bolts).
- No modifications to the flywheel are permitted.
- Flywheel bolts are free subject to them remaining in ferrous material.
- Clutch to be standard, unmodified, Ford Pinto based 8.5" item only.
- ***The only flywheel ring gear permitted is that for a standard Ford 2 litre Pinto engine, or the ring gear as fitted as standard to the engine specifically noted in Rule 1 Permitted Engines.***
- Standard Ford Pinto based starter motor must be fitted or a hi-torque competition replacement.
- ***The flywheel sensor and associated housing must remain completely unmodified.***



13. OIL COOLERS

- No oil cooler is permitted.

14. COOLING SYSTEM

- A water based liquid cooling system is mandatory.
- A water coolant additive is permitted.
- The standard production water pump and housing as fitted specifically to the engine noted in *Rule 1 Permitted Engines* must be retained, although drive to the pump, its rotational speed and direction may be changed as noted below.
 - Reverse water pump impellers are permitted but must retain six blades as per the original Ford water pump fitted to this engine. The reverse impeller must be fitted to the standard water pump.
 - Two additional pulleys (one in front of the crankshaft damper and one on the water pump) may be fitted to reverse the direction to the same as the crankshaft, when using a reverse impeller.
 - A single additional idler pulley may be used to reverse the direction of the unmodified water pump to the opposite direction to the crankshaft. This must be fitted using a bracket bolted to existing engine bolt holes only.
- The radiator and associated pipes are free.

- Fans are permitted for use but must be securely fitted to the water pump or crankshaft only - not on additional pulleys or brackets.
- Electric fans are permitted.
- No other pump may be used to circulate or assist circulation of the coolant liquid.
- Thermostat housing is free.

15. **ENGINE IGNITION CONTROL UNIT (ECU) AND ELECTRICAL**

- The only means of ignition timing will be by use of a Ford crankshaft speed sensor fitted to the standard manual sensor housing, and a genuine Ford or direct replacement aftermarket ignition coil for this engine as noted in *Rule 1 Permitted Engines* (this part must cross reference exactly to the original Ford item). No other sensors are permitted.
- The crankshaft speed sensor must have an air gap between 0.1mm to a maximum 0.8mm to the flywheel. This must be able to be inspected through a 25mm hole in the bell housing, located above the sensor and checked with feeler gauges.
- It is a mandatory requirement to use only the engine ignition control unit (ECU) and wiring loom supplied by the SSCA. The ECU will be assigned to a driver and electronically sealed. The ECU must not be altered by any party other than at the request of the SSCA, via the ECU manufacturer.
- The SSCA reserve the right to swap a driver's ECU for that being used by another driver or replacement item from stock. **FAILURE TO COMPLY WILL INCUR AN IMMEDIATE 12 MONTH BAN.**
- The engine ignition control unit (ECU) and/or any other ignition components may be exchanged, or electronically interrogated at any time upon the request of the SSCA. **SHOULD THE ECU BE TAMPERED WITH IN ANY WAY THIS WILL INCUR AN IMMEDIATE 12 MONTH BAN.**
- It is not permitted to alter, shorten or otherwise the wiring loom provided by the SSCA.
- It is prohibited to use any other method or component to trigger, distribute or time the ignition.
- The coil unit may be repositioned; the HT leads to the sparking plugs are free, for example the longer leads as fitted to a Ford V6 Cougar are permitted.
- Standard heat range sparking plugs only are permitted.
- The ECU diagnostic connector must be positioned in an accessible position, allowing access to it at all times by the SSCA and registered scrutineers only.

16. **EXHAUST MANIFOLD**

- The only exhaust manifold permitted is the cast manifold which is fitted as standard to the engine, and is stamped 968F9430. This must retain the Ford manufacturers stamp and all other markings. See photo.
No tubular exhaust manifolds permitted.
- The standard single down pipe must also be retained to a minimum length of 500mm. It is permitted to cut, straighten or bend the original downpipe to avoid engine mountings etc.
- The single down pipe must then connect as detailed in *Rule 21 Saloon Stock Car Specifications*.



17. **INLET MANIFOLD**

- The only inlet manifold permitted is that provided by the SSCA which is stamped accordingly.
- The inlet manifold must not be modified internally, to include (but not exclusively) shotblasting.
- The inlet manifold must not be modified externally in anyway.
- An aftermarket manifold to head casting gasket or silicone based sealer may be used to seal face to cylinder head only. The gasket must be no greater than 5mm in thickness.
- The angle of relationship between the carburettor and cylinder head face on the inlet manifold cannot be altered.

18. **CARBURETTOR**

- A fuel pressure regulator is permitted for use.
- For full carburettor rules refer to Rule 2 in the current SSCA Technical Specifications.

REVISED RULES FOR 2015 IN BOLD/ITALIC/RED PRINT
ITEMS MARKED ~~STRIKETHROUGH~~ ARE NO LONGER ALLOWED

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